Available online at www.sciencedirect.com
SCIENCE DIRECT®
ELSEVIER
Aquaculture 220 (2003) 921–925
Aquaculture
www.elsevier.com/locate/aqua-online

Contents of *Aquaculture*, Volume 220

VOL. 220 NOS. 1–4 **14 April 2003**

Diseases, Parasites and Predators

The effect of artificial light treatment and depth on the infestation of the sea louse *Lepeophtheirus salmonis* on Atlantic salmon (*Salmo salar* L.) culture
E.M. Hevrøy (Bergen, Storebø, Norway), K. Boxaspen (Storebø, Norway), F. Oppedal, G.L. Taranger (Matredal, Norway) and J.C. Holm (Bergen, Storebø, Norway) 1

Oral pharmacological treatments for ichthyophthiriosis of rainbow trout (*Oncorhynchus mykiss*)
A. Luzardo-Álvarez, J. Martínez-Mazagatos, M.T. Santamarina-Fernández
F.J. Otero-Espinar and J. Blanco-Méndez (Santiago, Spain) 15

The in vitro effect of CpG-ODNs on the innate immune response of common carp, *Cyprinus carpio* L.
A.C.M.A.R. Tassakka (Kagoshima, Japan) and M. Sakai (Miyazaki, Japan) 27

Therapeutic effects of enrofloxacin in an experimental infection with a luminescent *Vibrio harveyi* in *Artemia franciscana* Kellog 1906
A. Roque and B. Gomez-Gil (Mazatlán, Mexico) 37

Infection and mortality by the yeast *Metschnikowia bicuspidata* var. *bicuspidata* in chinook salmon fed live adult brine shrimp (*Artemia franciscana*)
M.M. Moore and M.S. Strom (Seattle, WA, USA) 43

Detection of monodon baculovirus and whitespot syndrome virus in apparently healthy *Penaeus monodon* postlarvae from India by polymerase chain reaction
S.K. Otta, I. Karunasagar and I. Karunasagar (Mangalore, India) 59

Dual disease resistance in a selectively bred eastern oyster, *Crassostrea virginica*, strain tested in Chesapeake Bay
L.M. Ragone Calvo, G.W. Calvo and E.M. Burreson (Gloucester Point, VA, USA) 69

Abnormalities of the operculum in gilthead sea bream (*Sparus aurata*): morphological description
P. Beraldo, M. Pinosa, E. Tibaldi and B. Canavese (Udine, Italy) 89

Life cycle of *Caligus rogercresseyi*, (Copepoda: Caligidae) parasite of Chilean reared salmonids
L. González (Valparaiso, Puerto Montt, Chile) and J. Carvajal (Puerto Montt, Chile) 101

Characterization of the DNA nucleotide sequences in the genome of red sea bream iridoviruses isolated in Korea
J.B. Jeong, L.J. Jun, M.H. Yoo (Busan, South Korea), M.S. Kim (Kyoung-gi, South Korea), J.L. Komisar (Silver Spring, MD, USA) and H.D. Jeong (Busan, South Korea) 119

In vitro survival and the effect of water chemistry and oxidative chemical treatments on isolated gill amoebae from AGD-affected Atlantic salmon
M.D. Powell and G.A. Clark (Launceston, Tas., Australia) 135

Comparison of diagnostic techniques for *Bonamia exitiosus* from flat oysters *Ostrea chilensis* in New Zealand
B.K. Diggles (Wellington, New Zealand), N. Cochennec-Laureau (La Tremblade, France) and P.M. Hine (Wellington, New Zealand) 145

Duration and method of fixation affects the sensitivity of a digoxygenin-labelled DNA probe in detecting *Kudoa thyrsites* in Atlantic salmon skeletal muscle
S.R.M. Jones, B. Goh and G. Prosperi-Porta (Nanaimo, BC, Canada) 157

Streptococcus iniae infection and tissue distribution in hybrid striped bass (*Morone chrysops*×*Morone saxatilis*) following inoculation of the gills
S.T. McNulty, P.H. Klesius, C.A. Shoemaker (Auburn, AL, USA) and J.J. Evans (Chestertown, MD, USA) 165
Determining culture strategies in populations of the European flat oyster, *Ostrea edulis*, affected by bonamiosis
J. Montes, B. Ferro-Soto, R.F. Conchas and A. Guerra (Pontevedra, Spain) 175
Bactericidal activity of cecropin B and cecropin P_1 expressed in fish cells (CHSE-214): application in controlling fish bacterial pathogens
A. Sarmasik (Canakkale, Turkey) and T.T. Chen (Storrs, CT, USA) 183

Genetics

High fry production rates using post-thaw silver carp (*Hypophthalmichthys molitrix*) spermatozoa under farming conditions
B. Alvarez, R. Fuentes, R. Pimentel, Z. Abad, E. Cabrera, E. Pimentel and A. Arenal (Camagüey, Cuba) 195
A genetic linkage map of the Japanese flounder, *Paralichthys olivaceus*
M.R.M. Coimbra, K. Kobayashi, S. Koretsugu (Tokyo, Japan), O. Hasegawa (Kanagawa Japan), E. Ohara, A. Ozaki, T. Sakamoto, K. Naruse and N. Okamoto (Tokyo, Japan) 203
Inbreeding depression and heterosis in various quantitative traits of the guppy, *Poecilia reticulata*
M. Nakadate, T. Shikano and N. Taniguchi (Sendai, Japan) 219
Yields of cultured Pacific oysters *Crassostrea gigas* Thunberg improved after one generation of selection
C. Langdon, F. Evans, D. Jacobson (Newport, OR, USA) and M. Blouin (Corvallis, OR, USA) . . . 227
Application of DNA markers to the management of Atlantic halibut (*Hippoglossus hippoglossus*) broodstock
T.R. Jackson (St. Andrews, New Brunswick, Halifax, Nova Scotia, Canada), D.J. Martin-Robichaud (St. Andrews, New Brunswick, Canada) and M.E. Reith (Halifax, Nova Scotia, Canada) 245

Husbandry and Management

The effect of diet type and quantity on the development of common sea urchin larvae *Echinus esculentus*
R.A. Jimmy (Scotland, Wales, UK), M.S. Kelly (Scotland, UK) and A.R. Beaumont (Wales, UK). . 261
Shifting the natural spring–summer breeding season of the Australian freshwater crayfish *Cherax quadricarinatus* into the winter by environmental manipulations
I. Karplus, H. Gideon and A. Barki (Bet-Dagan, Israel) 277
Growth and survival of juvenile seahorse *Hippocampus abdominalis* reared on live, frozen and artificial foods
C.M.C. Woods (Wellington, New Zealand) 287
Morphological and biochemical characteristics of phyllosoma after photothermal manipulation of reproduction in broodstock of the spiny lobster, *Jasus edwardsii*
E.G. Smith (Taroona, Launceston, Tas., Australia), A.J. Ritar (Taroona, Tas., Australia), C.G. Carter (Launceston, Tas., Australia), G.A. Dunstan and M.R. Brown (Hobart, Tas., Australia) 299
Phosphorus removal in a marine prototype, recirculating aquaculture system
Y. Barak, E. Cytryn, I. Gelfand (Rehovot, Israel), M. Krom (Leeds, UK) and J. van Rijn (Rehovot, Israel) 313
Tank culture of yellowfin tuna, *Thunnus albacares*: developing a spawning population for research purposes
J.B. Wexler (La Jolla, CA, USA), V.P. Scholey (Las Tablas, Panama), R.J. Olson, D. Margulies (La Jolla, CA, USA), A. Nakazawa (Minato-ku, Japan) and J.M. Suter (La Jolla, CA, USA) 327
Water quality control using *Spirulina platensis* in shrimp culture tanks
B. Chuntapa (Bangkok, Thailand), S. Powtongsook (Pathum Thani, Thailand) and P. Menasveta (Bangkok, Pathum Thani, Thailand) 355
Seawater adaptation and growth of post-smolt Atlantic salmon (*Salmo salar*) of wild and farmed strains
S.O. Handeland (Bergen, Norway), B.Th. Björnsson (Göteborg, Sweden), A.M. Arnesen (Tromsø, Norway) and S.O. Stefansson (Bergen, Norway) 367

Early temperature effects on muscle growth dynamics and histochemical profile of muscle fibres of sea bass *Dicentrarchus labrax* L., during larval and juvenile stages
O. López-Albors, M.D. Ayala, F. Gil (Murcia, Spain), A. García-Alcázar, E. Abellán (Pto. de Mazarrón, Spain), R. Latorre, G. Ramírez-Zarzosa and J.Mª. Vázquez (Murcia, Spain) 385
The impacts of aquacultured oysters, *Crassostrea virginica* (Gmelin, 1791) on water column nitrogen and sedimentation: results of a mesocosm study
J.M. Pietros and M.A. Rice (Kingston, RI, USA) 407
Qualitative modelling of the kelp forest of *Lessonia nigrescens* Bory (Laminariales: Phaeophyta) in eulittoral marine ecosystems of the south–east Pacific: an approach to management plan assessment
M. Ortiz (Antofagasta, Chile) 423
The effects of ozone and probiotics on the survival of black tiger shrimp (*Penaeus monodon*)
O. Meunpol, K. Lopinyosiri and P. Menasveta (Bangkok, Thailand) 437
Comparative Nile tilapia and silver carp filtration rates of Partitioned Aquaculture System phytoplankton
H. Turker, A.G. Eversole and D.E. Brune (Clemson, SC, USA) 449
Food ration requirements of 0^+ yellowtail flounder *Limanda ferruginea* (Storer) juveniles
V. Puvanendran, D.L. Boyce and J.A. Brown (St. John's, New Foundland, Canada) 459
A comparison of development opportunities for crab and shrimp aquaculture in southwestern Bangladesh, using GIS modelling
M.A. Salam (Stirling, UK; Mymensingh, Bangladesh), L.G. Ross and C.M.M. Beveridge (Stirling, UK) 477
Variation in short-term survival of cultured sandfish (*Holothuria scabra*) released in mangrove–seagrass and coral reef flat habitats in Solomon Islands
S.K. Dance, I. Lane and J.D. Bell (Penang, Malaysia) 495
Effects of anaesthesia with MS-222, clove oil and CO_2 on feed intake and plasma cortisol in steelhead trout (*Oncorhynchus mykiss*)
J. Pirhonen and C.B. Schreck (Corvallis, OR, USA) 507
The influence of rearing density on stress response and disease susceptibility of ayu (*Plecoglossus altivelis*)
K. Iguchi (Nagano, Japan), K. Ogawa, M. Nagae (Nagasaki, Japan) and F. Ito (Nansei, Japan) 515
Fin development in stream- and hatchery-reared Atlantic salmon
R.M. Pelis and S.D. McCormick (Turners Falls, MA, USA) 525
Effects of varying *Artemia* enrichment on growth and survival of juvenile seahorses, *Hippocampus abdominalis*
C.M.C. Woods (Wellington, New Zealand) 537
Shrimp and fish pond soils: processes and management
Y. Avnimelech and G. Ritvo (Haifa, Israel) 549
Seasonal condition and body composition changes in sharpsnout seabream (*Diplodus puntazzo*) raised in captivity
M.D. Hernández, M.A. Egea, F.M. Rueda, F.J. Martínez and B. García García (Murcia, Spain) 569
Self-feeding behavior of yellowtail, *Seriola quinqueradiata*, in net cages: diel and seasonal patterns and influences of environmental factors
J. Kohbara, I. Hidaka, F. Matsuoka, T. Osada (Tsu, Japan), K. Furukawa (Tokyo, Japan), M. Yamashita (Tsu, Japan) and M. Tabata (Yamanashi, Japan) 581
Effect of temperature on hatching success and size of striped trumpeter (*Latris lineata*) larvae
D.T. Morehead and P.R. Hart (Hobart, Tas., Australia) 595
Graded environmental hypercapnia in juvenile spotted wolffish (*Anarhichas minor* Olafsen): effects on growth, food conversion efficiency and nephrocalcinosis
A. Foss, B.A. Røsnes and V. Øiestad (Tromsø, Norway) 607

Nutrition

Effects of dietary protein level on spawning performance of Nile tilapia (*Oreochromis niloticus*) broodstock reared at different water salinities
A.-F.M. El-Sayed (Alexandria, Egypt), C.R. Mansour (Lattakia, Syria) and A.A. Ezzat (Alexandria, Egypt) 619

Flumequine depletion from muscle plus skin tissue of gilthead seabream (*Sparus aurata* L.) fed flumequine medicated feed in seawater at 18 and 24 °C
A.E. Tyrpenou, Y.P. Kotzamanis and M.N. Alexis (Athens, Greece) 633
Effects of various feed supplements containing fish protein hydrolysate or fish processing by-products on the innate immune functions of juvenile coho salmon (*Oncorhynchus kisutch*)
A.L. Murray, R.J. Pascho, S.W. Alcorn, W.T. Fairgrieve, K.D. Shearer (Seattle, WA, USA) and D. Roley (Warrenton, OR, USA) 643
Effect of water temperature and short-term fasting on macronutrient self-selection by common carp (*Cyprinus carpio*)
T. Yamamoto, T. Shima, H. Furuita and N. Suzuki (Tamaki, Japan) 655
Dietary carbohydrate/lipid ratios and nutritional condition in juvenile southern rock lobster, *Jasus edwardsii*
D.J. Johnston, K.A. Calvert (Launceston, Tas., Australia), B.J. Crear (Hobart, Tas., Australia) and C.G. Carter (Launceston, Tas., Australia) 667
The effect of diet on ossification and eye migration in Atlantic halibut larvae (*Hippoglossus hippoglossus* L.)
Ø. Sæle (Bergen, Norway), J.S. Solbakken (Storebø, Norway), K. Watanabe, K. Hamre and K. Pittman (Bergen, Norway) 683
Nocturnal feeding reduces sea bass (*Dicentrarchus labrax*, L.) pellet-catching ability
V.C. Rubio, F.J. Sánchez-Vázquez and J.A. Madrid (Murcia, Spain) 697
Immunological and pathological status of gilthead sea bream (*Sparus aurata* L.) under different long-term feeding regimes
A. Sitjà-Bobadilla, M. Mingarro (Castellón, Spain), M.J. Pujalte, E. Garay (Valencia, Spain), P. Alvarez-Pellitero and J. Pérez-Sánchez (Castellón, Spain) 707
Effect of arachidonic acid levels in broodstock diet on larval and egg quality of Japanese flounder *Paralichthys olivaceus*
H. Furuita, T. Yamamoto, T. Shima, N. Suzuki (Tamaki, Japan) and T. Takeuchi (Minato, Japan) . . 725
Total replacement of fish oil by soybean or linseed oil with a return to fish oil in Turbot (*Psetta maxima*) 2. Flesh quality properties
C. Regost, J. Arzel (Plouzané, France), M. Cardinal (Nantes, France), G. Rosenlund (Stavanger, Norway) and S.J. Kaushik (Saint Pée-sur-Nivelle, France) 737
Effects of dietary amino acid profile on growth performance, key metabolic enzymes and somatotropic axis responsiveness of gilthead sea bream (*Sparus aurata*)
P. Gómez-Requeni, M. Mingarro (Castellón, Spain), S. Kirchner (Saint-Pée-sur-Nivelle, France), J.A. Calduch-Giner (Castellón, Spain), F. Médale, G. Corraze, S. Panserat (Saint- Pée-sur-Nivelle, France), S.A.M. Martin, D.F. Houlihan (Aberdeen, UK), S.J. Kaushik (Saint-Pée-sur-Nivelle, France) and J. Pérez-Sánchez (Castellón, Spain) 749
Effect of dietary protein:energy ratio on intake, growth and metabolism of juvenile green abalone *Haliotis fulgens*
L. Gómez-Montes (México, Mexico), Z. García-Esquivel (Ensenada, Mexico), L.R. D'Abramo (Starkville, MS, USA), A. Shimada (Ajuchitlán Qro., Mexico), C. Vásquez-Peláez (Mexico DF, Mexico) and M.T. Viana (Ensenada, Mexico) 769

Physiology and Endocrinology

Gametogenic cycle of the transplanted-cultured pearl oyster, *Pinctada fucata martensii* (Bivalvia: Pteriidae) in Korea
Y.H. Choi and Y.J. Chang (Busan, South Korea) 781
Development of hemolymph prostaglandins assay systems and their concentration variations during ovarian maturation in the kuruma prawn, *Penaeus japonicus*
D. Tahara and I. Yano (Fukui, Japan) 791
Phosphorus utilization in rainbow trout (*Oncorhynchus mykiss*) fed practical diets and its consequences on effluent phosphorus levels
R.M. Coloso (Newark, NJ, USA; Tigbauan, Philippines), K. King, J.W. Fletcher, M.A. Hendrix (Lamar, PA, USA), M. Subramanyam (Gardners, PA, USA), P. Weis and R.P. Ferraris (Newark, NJ, USA) . . . 801

Induction of triploidy in the turbot (*Scophthalmus maximus*): II. Effects of cold shock timing and induction of triploidy in a large volume of eggs
F. Piferrer (Barcelona, Spain), R.M. Cal, C. Gómez (Vigo, Spain), C. Bouza and P. Martínez (Lugo, Spain) 821
Effect of dietary vitamin C supplementation on the oxygen consumption, ammonia-N excretion and Na^+/K^+ ATPase of *Macrobrachium nipponense* exposed to ambient ammonia
A.-L. Wang (Guangzhou, PR China), W.-N. Wang (Guangzhou, Baoding, PR China), Y. Wang (Baoding, Qingdao, PR China), L.-X. Shang, Y. Liu (Baoding, PR China) and R.-Y. Sun (Guangzhou, Beijing, PR China) 833
Effects of dissolved oxygen on hemolymph parameters of freshwater giant prawn, *Macrobrachium rosenbergii* (de Man)
W. Cheng, C.-H. Liu and C.-M. Kuo (Pingtung, Taiwan) 843
Disrupted sexual cycles in female grass carp (*Ctenopharyngodon idella*) raised in tropical conditions
F. Glasser, C. Cauty, B. Mourot and B. Breton (Rennes, France) 857
A comparison of the swimming and cardiac performance of farmed and wild Atlantic salmon, *Salmo salar*, before and after gamete stripping
K.M. Dunmall and J.F. Schreer (Waterloo, Ont., Canada) 869
Larval settlement of the silver- or goldlip pearl oyster *Pinctada maxima* (Jameson) in response to natural biofilms and chemical cues
B. Zhao (Hong Kong, China), S. Zhang (Sanya, China) and P.-Y. Qian (Hong Kong, China) 883
Physiological responses, desaturase activity, and fatty acid composition in milkfish (*Chanos chanos*) under cold acclimation
S.L. Hsieh (Ping-tung, Taiwan), Y.N. Chen (Penghu, Taiwan) and C.M. Kuo (Ping-tung, Taiwan) . . 903

Book review
Rural Aquaculture
B.A. Costa-Pierce (Narragansett, RI, USA) 919

Contents of *Aquaculture*, Volume 220 921